

revision, codes 140 to 239) not classified by Rutstein et al.<sup>4</sup> as being avoidable. As in the previous studies,<sup>1,2</sup> we controlled for age, gender, and adaptive skills. The sample included all persons with mental retardation aged 40 years or older who received services from the state of California during the period 1985 through 1994. As previously, we used logistic regression ("pooled repeated observations"<sup>2,5</sup>) on the 128 296 person-years of data.

For these unavoidable deaths, we found slightly higher mortality in the institutions than in the community (odds ratio [OR] = 1.19, representing 19% higher odds of mortality), although the difference was not statistically significant. We then analyzed the remaining 1706 deaths (i.e., after excluding the 239 presumably unavoidable cancer deaths) and found a 98% higher mortality risk in the community than in the institutions (OR=1.98; 95% confidence interval 1.7, 2.3). For all deaths combined, the excess mortality in the community was 79%.

These findings do not support the hypothesis that the methodology favors the institutions. On the contrary, they suggest that the 72% higher community mortality found by Strauss and Kastner<sup>2</sup> may, in fact, underestimate the excess of avoidable deaths. □

**David Strauss, PhD**  
**Robert Shavelle, PhD**

The authors are with the University of California, Riverside, Life Expectancy Project.

Requests for reprints should be sent to David Strauss, PhD, University of California, Statistics/Computer Bldg, Room 2638, Riverside, CA 92521-0138.

## References

1. Strauss DJ, Kastner TA. Comparative mortality in institutions and the community. *Am J Ment Retard.* 1996;101:26-40.
2. Strauss DJ, Eyman RK, Grossman HJ. Predictors of mortality in children with severe mental retardation: the effect of placement. *Am J Public Health.* 1996;86:1422-1429.
3. Durkin MS. Beyond mortality—residential placement and quality of life among children with mental retardation. *Am J Public Health.* 1996;86:1359-1360.
4. Rutstein D, Berenberg W, Chalmers TC, Child CG, Fishman AP, Perrin EB. Measuring the quality of medical care. *New Engl J Med.* 1976;294:582-588.
5. Cupples LA, D'Agostino RB, Anderson K, Kannel WB. Comparison of baseline and repeated measure covariate techniques in the Framingham Heart Study. *Stat Med.* 1988;7:205-222.

## Durkin Responds

It is not clear to me how the distinction between unavoidable cancer deaths and

other deaths helps rule out the potential bias mentioned in the editorial, that is, a bias that would result from not controlling for level of impairment among community residents. I would urge the authors to think about this and try to explain, perhaps through examples, the relevance of distinguishing unavoidable cancer deaths in the context of the controversy. The potential bias in the previous analysis would result from controlling for adaptive skills (which may be enhanced by community residence), but not for impairment per se. The reanalysis mentioned in the letter does not address this issue any more than the initial analysis did. Moreover, while the initial paper was restricted to mortality among children, the reanalysis reported in Strauss and Shavelle's letter pertains only to adults over the age of 40. Thus, on two counts I fail to see the relevance of the data reported in the letter to the problem with the initial paper that the letter purports to address. □

**Maureen Durkin, PhD, DrPH**

Requests for reprints should be sent to Maureen Durkin, Columbia University, College of Physicians and Surgeons, Gertrude H. Sergievsky Center, 630 West 168th St, P&S Unit 16, New York, NY 10032.

## Racism and Lead Poisoning

A comparison of data from the second and third National Health and Nutrition Examination Surveys indicates that childhood lead poisoning prevention policies between 1976 and 1991 benefited White children 10% more than Black children.<sup>1</sup> As a result of this growing racial disparity, in 1994 Black children were more than four times more likely than White children to have elevated blood lead levels and seven times more likely to require medical evaluation for lead poisoning. In 1997, for the first time since the implementation of federal lead poisoning prevention policy 25 years ago, more Black children than White children are likely to experience elevated blood lead levels.

Lanphear et al. examined an urban population and found that Black children possess higher blood lead levels than White children, largely as a result of differences in environmental exposures and housing conditions.<sup>2</sup> The extreme, multidimensional, cumulative residential segregation—or hypersegregation—experienced by Black people in some large metropolitan areas offers a compelling explanation for why such differences may exist.<sup>3</sup>

Hypersegregation creates Black communities in old and poor neighborhoods.

Whereas housing in many typical Black communities dates to 1955, housing in hypersegregated areas was typically built in 1940 and thus constitutes a high priority for lead hazard control.<sup>4</sup> This high priority was assigned, in part, because the percentage of homes exceeding federal dust and soil lead guidelines jumps from under 20% for homes built after 1940 to more than 50% for those built before 1940.<sup>5</sup> This leap is due to the increased presence of deteriorated housing, the use of older paints with higher concentrations of lead, and the closer proximity to heavily trafficked urban corridors.

Hypersegregation also concentrates poverty. As a result, mobility in hypersegregated communities is substantially less than in other Black communities. The concentration of poverty is also likely to decrease access to health care while increasing levels of malnutrition that, in turn, increase lead absorption and promote pica behavior.

The end result is that, in hypersegregated communities, Black children are likely to live in more severely lead-contaminated environments where malnutrition maximizes lead intake while decreased mobility and poor health care increase the potential period of hazardous exposure. My concern that hypersegregation operates in this fashion is all the greater given that the phenomenon rapidly spread during the 1980s from the northeastern United States to the Midwest and the South.

The effects of residential segregation on other public health problems are beginning to receive serious consideration.<sup>6-8</sup> Examining how institutional racism hypersegregates Black communities expands the range of potential solutions to childhood lead poisoning and may enable researchers and policymakers to move beyond identifying racial disparities in disease.<sup>9</sup> Environmental justice demands that we do no less. □

**Max Weintraub, MS**

Requests for reprints should be addressed to Max Weintraub, MS, US Environmental Protection Agency, Region IX, 75 Hawthorne St, Mail Code CMD-4-2, San Francisco, CA 94105-3901.

## References

1. Weintraub M. Childhood lead poisoning: an environmental justice success story. *Healthy and Sustainable Communities Report Series.* Atlanta, Ga: Clark Atlanta University, Environmental Justice Resource Center Web Page (<http://www.ejrc.cau>); 1997.
2. Lanphear BP, Weitzman M, Eberly S. Racial differences in urban children's environmental exposures to lead. *Am J Public Health.* 1996;86:1460-1463.
3. Denton NA. Are African Americans still hypersegregated? In: Bullard RD, Grigsby JE

- III, Lee C, eds. *Residential Apartheid: The American Legacy*. Los Angeles, Calif: Center for Afro-American Studies, University of California, Los Angeles; 1994.
4. Lead-Based Paint Hazard Reduction and Financing Task Force. *Putting the Pieces Together: Controlling Lead Hazards in the Nation's Housing*. Washington, DC: US Dept of Housing and Urban Development; 1995:69–72. HUD publication 1547-LBP.
5. Office of Pollution Prevention and Toxics. *Report on the National Survey of Lead-Based Paint in Housing*. Washington, DC: US Environmental Protection Agency; 1995. EPA publication 747-R95-003.
6. Polednak AP. Trends in US urban black infant mortality, by degree of residential segregation. *Am J Public Health*. 1996; 86:723–726.
7. Massey DS. Getting away with murder: segregation and violent crime in America. *Univ Penn Law Rev*. 1995;143:1203–1232.
8. Acevedo-Garcia D. *Has Residential Segregation Shaped the Epidemiology of Tuberculosis among United States Minorities? The Case of New Jersey, 1985–1992*. Princeton, NJ: Princeton University; 1996. Dissertation.
9. Williams DR, Collins C. U.S. socioeconomic and racial differences in health: patterns and explanations. *Annu Rev Sociol*. 1995; 21:349–386.